Persuasive Practices: Learning from Home Security Advisory Services

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Abstract. Research on persuasive technologies (PT) focuses, primarily, on the design and development of IT for inducing change of individual's behavior and attitude through computer-human and computer-mediated influence. The issue of practices in co-located human-human persuasive encounters remained unattended in the PT community. This study uses the notion of persuasive practices to understand the course of events in face-to-face home security advisory sessions – it specifies and illustrates such practices and discusses their impact on the persuasiveness of the encounter. Furthermore, it presents potential of IT to support such persuasive practices thus opening new research possibilities of PT research.

Keywords: Advisory encounter · Human-Human influence · Practices · F2F

1 Introduction

Persuasive technologies (PT) are engineered to reinforce, change or shape behaviors and attitudes of individuals towards specific areas of their life [21]. Technology can either directly influence an individual's behavior or, alternatively, act as mediator or moderator of social influence [26], i.e., it transfers information on other's opinions or behaviors. In this study, we explore yet another role that technology plays in the context of persuasion: it can facilitate persuasive practices in situations where human influence is exhibited in a face-to-face encounter. There exists a category of such encounters where considering solely the technology – a view that has dominated in PT community so far – does not resemble the complexity of conducted activities and their effect on the persuasive effect. We postulate, that, in such situations, the IT should not be considered as a standalone factor in the success or failure of persuasion efforts – it is not a *machine* that produces persuasiveness. Instead, it becomes a *tool*, which – if embraced in specific practices – can be very effective and support the change of persuadee's attitude and behaviors [3]. Such perspective on PT helps, in particular, in high-touch situations, i.e., where direct influence between humans through practices comes to the fore. Practices are seeable, indigenous actions that participants directly engage in, but do not attend to them in an analytic manner [7, 18]. Still, practices can be object of systematic analytic approach in research [18] – their consideration in the area of PT is a response to the recent call for the practice-turn in human-computer interaction [13].

In the current study, we focus on the case of home security (HS) advisory services. It is an encounter between (1) a help-seeking homeowner, who wants to make their property more secure (persuadee), and (2) a professional HS advisor (persuader). Even though persuadees often see the need for improving their home's security, they lack ability and motivation to tackle those issues. HS advisory service shall make it easier for them to reach their goal: its goal is to identify most important flaws and pave the way for improvement through mechanical upgrades and security-aware behavior. However, according to a preliminary study, only 20 % of improvements suggested during the advisory sessions are implemented by the homeowners [24]. Given the reportedly successful application of PT in other difficult areas, e.g., preventive healthcare, we propose to include its basic principles in a HS-dedicated *socio-technical persuasive system*, which we define as an information system designed to reinforce, change or shape persuadee's attitudes or behaviors [20]. It consists of a human persuader who engages in *persuasive practices* with use of his tools such as: IT, brochures, notebooks, and exhibits, as well as objects in their surroundings, e.g., windows and doors at persuadee's home. We understand persuasive practices as practices that exhibit the desire to influence the behavior or attitude of conversation partner. We subscribe to very local and timely-limited notion of practices like the one used in conversation analysis [10] or multimodal analysis of encounters [12]. Such practices, normally, involve use of tools and artifacts, which, in turn, shape the practices – the materialistic and social perspective intertwine and form a socio-material view [27]. So far, the socio-material character of IT in persuasive encounters did not attract much attention in research. In particular, the relation between design of PT as a collaborative system and the course of events in persuasive encounters remains unclear. The current study addresses this gap while taking an exploratory mixed-method approach.

To frame the exploration we formulate our research questions as follows:

RQ 1: What persuasive practices emerge in persuasive encounters of HS advisors?

RQ 2: How can we support the persuasive practices of HS advisors by means of IT?

With these research questions in mind, we aim at presenting persuasive practices employed by the advisor with and without an IT tool designed along the basic guidance originating from the field of PT, and we want to show how the application of such IT-enhanced practices improve the persuasive character of the encounters.

2   Related Work

The scenario we address in our research clearly relies on interpersonal, face-to-face persuasion. This mode of influence so far remains outside the core focus of the discourse on PT. We propose to supplement the traditional conversation-based encounter with IT designed, explicitly, to support the persuasion efforts. While it differs from the core PT literature, reconsideration of it informs the design of the proposed tool.

Interpersonal Influence and Persuasive Technologies: Persuasion, being defined as "human communication designed to influence the autonomous judgments and actions of others" [25] as well as "a successful intentional effort at influencing another's mental

state through communication in a circumstance in which the persuadee has some measure of freedom" [22], relies on interaction between two actors. Conventionally, the persuader provides arguments [22] and appeals to the deep human drives of the persuadee [4]. The persuadee does or does not undergo changes in their attitudes and behaviors with regard to a topic [4]. This highly interactive nature of persuasion finds acknowledgement in the area of PT where technology is postulated to substitute human and establish a computer-human persuasion scenario [26].

Conventionally, two perspective emerged within PT research of how technology influences the behavior and attitude of an individual: (1) computer-human influence and (2) computer-mediated human-human influence [20]. Persuasive systems belonging to the former category rely on the assumption that technology can act as social agent and, thus, impact the behavior of an individual [26]. In cases where technology acts as mediator (e.g., blogs, forums, and social networks), the individual's behavior or attitude underlies social influence in form of user-generated content mediated by dedicated technology [8, 26]. Recently, a novel technology-dependent mode of persuasion was proposed: computer-moderated influence [26]. Systems belonging to that category transfer information on the behavior of others and influence an individual's behavior or attitude by promoting behavior-based and not content-based social influence [26].

According to the seminal paper of Fogg [6], persuasion is likely to be successful when three interrelated factors are addressed: *motivation* related to the feeling of discomfort and rejection of current state, *ability* describing how simple or difficult it is to reach the target behavior, and *trigger* being a signal, facilitator, or spark that tells people to perform the change at a particular moment [6]. Those factors were developed in the context of computer-human influence, but were applied as design guidelines for computer-mediated influence too [17]. We argue that software developed along those lines, will contribute to the emergence of relevant persuasive practices and thus support persuasion in face-to-face persuasive encounters.

Persuasive Practices: The topic of persuasive practices – as longitudinal gradual changes – was addressed in relation to ubiquitous systems informing users about their behaviors and bringing about change in their attitudes and behaviors [23]. Such systems do well in scenarios with clear goals and clear ways to reach them, such as in the case of WaterBot [1] where the information on used water motivates the user to reduce water wasting or in apps inducing change in the life style [23]. However, in the scenario of HS, the ways of improving things are not straight forward and require involvement of a human actor who can establish understanding for security issues and related topics.

Persuasive practices employed in the traditional service encounters, relying on interpersonal influence, aim at securing the attention of the persuadee and at ensuring the right pre-condition for transferring the message [2]. As discussed in consulting literature, this involves directly addressing the persuadee, posing questions and provocative statements, as well as using various encodings [2]. We expect that an IT tool equipped with dedicated features will impact the way the advisor engages in such practices, thus changing the general impression on the persuasiveness of the HS advisory service.

3 Methodology

Preliminary Studies: This study is a part of a research program on burglary-prevention conducted in collaboration with the responsible authorities, i.e., state police departments from Germany and Switzerland. The preliminary studies focused on shadowing the advisor at real HS advisory sessions, interviews with the involved stakeholders, and formative tests of the proposed technology. It enabled us to better understand how the advisors see their main task and how they behave during advisory sessions. It pointed to persuasion as a central issue in this context.

Technology Design: The tool was designed in a user-centered process according to the requirements collected from stakeholders: advisors requested access to materials they know (schemata, pictures) and wanted an easy-to-carry device; homeowners requested a better understanding of the complex information and more personalization; and authorities requested more standardization of the advisory service. The tool shall improve the persuasive character of the encounter to make the persuadee tackle the security issues. The design was inspired by the persuasion model by Fogg [6]: The tool offers a list of standard needs and fears to give the advisor a possibility to address the emotions and appeal to persuadee's *motivation* (cf. Fig. 1a). It offers multiple ways of visualizing important technical and behavioral information to address persuadee's *ability* (cf. Fig. 1c and d) [5]. A prioritization tool and means to email a PDF with the priorities to the persuadee establishes a *trigger* (cf. Fig. 1b) [5]. We use the tool as a vehicle to observe emerging practices and compare them to the non-IT condition.
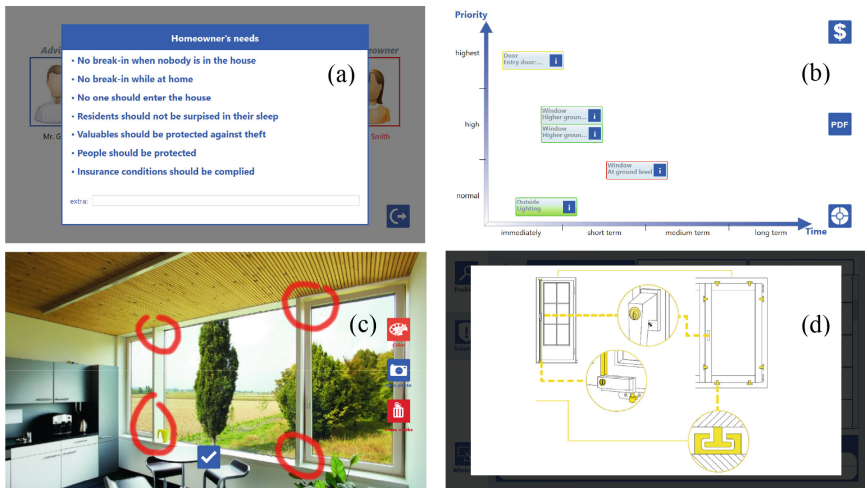

Fig. 1. Exemplary screens included in the HS advisory service support tool (a) Homeowner's needs, (b) Prioritization, (c) Photo taking and annotation, (d) Schemata.

Data Collection: The setting we chose for data collection enables for a natural interaction in a realistic setting. Collecting data from real advisory sessions is nearly impossible because homeowners are reluctant to agree on recordings of their private

properties and, in particular, the security flaws thereof. Identification of low-level interactional and conversational practices requires extensive and possibly multimodal data set [10]. We therefore conducted a design experiments [16], thus presuming that introduction of an IT has impact on conversation practices and aiming at their identification.

The overall experiment followed the within-subject design with two conditions: IT and non-IT. It was scenario-driven: each test person was asked to put oneself in a position of a homebuyer who visits two different houses with a home security advisor to receive advice on how to make their future property more secure. No advisor saw the same property twice. We compensate for the order effects while alternating the conditions order. Overall, 20 persuadees and 10 advisors participated in the experiment. Whereas the advisors were policemen who conduct HS encounters on daily basis, the homeowners were a convenience sample acquired through different channels including social media – their age, status, and gender varied, but all of them knew the feelings around buying a new house – they were in a similar situation before. They were not paid for their participation – they were doing it out of interest and received inexpensive gifts after the test. The test was conducted on five days in March 2015 in Mannheim and Frankfurt, Germany, at a pre-fabricated houses fairs. Before the experiment, each advisor participated in a day-long training on the features of the tool and could try it out in role-play exercises. The trainings took part in the same week as the experiments. Additionally, brush-up trainings were conducted on the day of the experiment.

After going through two advisory sessions (IT and non-IT), each persuadee attended a survey and a semi-structured interview built around the topic of interaction quality (e.g., mutual understanding) and persuasion (e.g., emotional response, motivation, ability). In the survey, each participant answered questions related to perceived persuasiveness (PERS) and design aesthetics (DESA) of the encounter on a five-point Likert scale adapted to reflect the HS advice [15]. Overall PERS score were computed based on answers to the such questions as: (1) the *advisory session* (AS) influenced me, (2) the AS was tailored to me personally, (3) the AS makes me rethink my security behavior. DESA score uses on the following: (1) the AS uses attractive tools, (2) the general appearance of the AS is appealing, (3) the AS provides nice visual experiences [15].

Data Analysis: The collected data in form of video and audio recordings was analyzed by an experienced researcher. First, the audio recordings were transcribed. Second, annotations regarding the ongoing actions of advisor and the persuadee were attached. Third, a portion of data (10 random samples of fifteen minutes from various recordings) were taken to identify criteria for interesting episodes – all episodes considered relevant (i.e., including persuasive practices) by at least two researchers either of the following occurred: directly addressing the persuadee with questions including second-person personal pronoun (Engl. "you", Germ. "Sie"), directly addressing the persuadee through directive speech, or directly addressing the persuadee with statements including modal auxiliary verbs (Engl. "you may…", Germ. "Sie mögen…"). Fourth, all episodes extracted from the videos based on the criteria (446 episodes) were clustered based on their similarity in an interactive session involving two researchers. Fourth, abstract descriptions of the clusters were generated based on the transcripts and

annotations and put into context of the ongoing action. Moreover, passages from the interviews that related to the particular identified practices were extracted.

Additionally, we applied a mix of statistical tests to identify relation between DESA or PERS values and observed practices. In those tests we treated the observed practices as independent variables with value 1 if a practice was applied in an advisory session and 0 otherwise. We identified practices, that have influence on the dependent variables: DESA and PERS. We run our tests separately for the IT and non-IT conditions – the reported results can be treated as in a between subject study. Following the above, we chose a set of statistical tests appropriate for identification of dependences between nominal independent variables with two or more levels and continuous (interval) dependent variables [11, 14]. We employed the following tests: two-independent-sample t-test, Kruskal-Wallis test, and multiple regression. This approach allowed for formulation of relevant hypotheses and should be treated as indication of possible directions for future research, but not as ultimate evidence for the reported influence or its direction. In particular, our experiment was not designed to detect them and the fact that some of the practices were or were not applied in the particular sessions is more a matter of chance than a consequence of deliberate experiment design. Here, we report on observations with significance coefficient lower or equal to 0.1 (designated by p).

4   Results

In the following, we report on the observations we made across the very extensive data set obtained in the described experiment. First, we show the practices employed by the advisors in the course of their persuasive activities. In particular, we point to the specific practices that are made available by the proposed technology, show how they fit the advisory session, and compare them to corresponding practices in the non-IT condition. Second, we discuss the collected opinions and statistical data that indicate what practices are beneficial or destructive to the overall persuasive character of the encounter.

4.1   Identifying Persuasive Practices in Home Security Advisory Encounters

Thanks to the very extensive preliminary studies in the context of HS advisory services, we could identify three particular goals that advisors follow in their daily work: First, they want to offer help that fits homeowner's needs and situation. Second, they want to provide convincing explanations regarding complicated technical features and behavioral issues. Third, they want to bring the persuadee to tackle the discussed issues – they should contact, e.g., local providers of HS hardware, or change their behaviors. During the analysis of the data, we were able to identify practices in each of the three areas – in the following, we shortly characterize them and provide information on their occurrence across our data set (Tables 1, 2, and 3).

Current Situation and Needs of the Homeowner: According to its definition, persuasion aims at changing, reinforcing or shaping new behaviors and attitudes. This may be ineffective, if the current situation or needs of the persuadee remain hidden. Consequently, that advisors try to approach this topic. If one considers the model proposed by Fogg [6], the work that advisors do while learning to know the homeowner falls into the area of *motivation* – discussing the needs and feelings regarding security makes clear to the persuadee why the encounter takes place and why HS is important.

Table 1. Persuasive practices related to learning and addressing homeowner's needs

Practice and its description
Practice 1 – asking: The advisors introduce the topic of HS mostly by simply asking for the reason of the encounter – after a short introduction they simply pose a question. Often, the answer of the customer is not proceeded by any further discussion. Then, the advisor simply moves to the next point on their agenda, mostly reviewing the security features of doors. Practice 1 occurs with the following frequency: *(a)   IT   5   times (out of 20)*   *(b)   non-IT   11   times (out of 20)* In 3 further non-IT cases, not even a single question was asked regarding the homeowner's HS needs.
Practice 2 – discussing: After receiving an answer, the advisor continues on the topic while paraphrasing the answer and, important, asking further questions to additional information instead of simply moving to the next topic being mostly window's or door's hardware. Practice 2 occurs with the following frequency: *(a)   IT   15   times (out of 20)*   *(b)   non-IT   6   times (out of 20)* We speculate that this frequency results from the fact that the tool includes a screen (Figure 1a) where advisor can choose from a set of standard needs to characterize the current situation of the homeowner. Even though the suggestions in the tool are rather general, the accompanying discussions were more extensive than that.
Practice 3 – recording: While or after listening to the homeowner's HS needs, the advisor takes notes of the needs in the tool by choosing respective fields, but does not show to the client what he chooses or touches – the advisor treats the tool as his private device. In the non-IT setting, the advisors did not make any effort to record the information regarding the homeowner's needs. Practice 3 occurs with the following frequency: *(a)   IT   9   times (out of 20)*   *(b)   non-IT   no comparable practice*
Practice 4 – collaborative recording: As opposite to the previous situation, here the advisor takes care of involving the client into the recording. This happens by sharing the screen with them and by paraphrasing the needs expressed by the client to fit the descriptions in the tool. Advisors leverage this situation to introduce the tool and explain its role in the advisory session. Practice 4 occurs with the following frequency: *(a)   IT   9   times (out of 20)*   *(b)   non-IT   no comparable practice*
Practice 5 – reviewing: The advisor gets back to a particular need or set of needs expressed earlier by the persuadee. This often happens when he presents the final report of the encounter or, in fewer cases, when discusses particular improvement of a security feature. Practice 5 occurs with the following frequency: *(a)   IT   10   times (out of 20)*   *(b)   non-IT   0   times (out of 20)*

Missing Security Features: Persuasion is ineffective if the persuadee does not recognize the attitude or behavior she should change to reach her goals. In our particular case, this includes assembling of new security elements for doors and windows, as well as establishing new routines using those security elements (e.g., locking the windows with a to-be-installed lock mechanism as opposed to simply closing them). The work that the advisors do while teaching the new behaviors falls into the area of *ability* according to Fogg's model [6]. We observe a whole range of practices in this context.

Personalized Recommendation: Given the presented understanding of persuasion, the practices presented above may be ineffective if the persuadee does not know how to approach the set of proposed changes, i.e., what steps to take to reach her goal. In our particular case, a persuadee needs to know what is obligatory and what is optional, what can be done easily (e.g., on changing insecure behaviors), and what requires more

Table 2. Persuasive practices related to presenting security improvements and new routines

Practice and its description
Practice 6 – illustrating through gesture: The advisors explain the flaws of windows and doors directly at the object, while pointing to the particular features (e.g., lock mechanism) and explaining how it may be improved, i.e., how it should look like and be used in the future. This is a practice that seems to be essential to all advisors and is applied at least several times in the IT and non-IT condition.
Practice 7 – taking picture: The advisor takes picture of the particular object or feature via the camera included in the tool. This practice has two forms: (1) the advisor takes the picture *alone* while the homeowner goes on the side; (2) the advisor tries to keep the homeowner involved by explaining what he does and maintaining the conversation or by incorporating the persuadee in the process of photo taking (encouraging her to look at the picture being taken). Practice 7 occurs with the following frequency: *(a)   alone + IT   17   times (out of 20)   (b)   together + IT   3   times (out of 20)*
Practice 8 – annotating picture: The advisor adds specific marking to the previously taken picture in form of rough drawings done by touching the screen – such annotations depict particularly weak or strong points of the object in the picture. Again, this practice is done only by the advisor or in collaborative manner with the persuadee. It can only occur in IT condition. Practice 8 occurs with the following frequency: *(a)   alone + IT   5   times (out of 20)   (b)   together + IT   14   times (out of 20)*
Practice 9 – reviewing picture: Advisor reviews the picture and shows it to the homeowner to return to a particular topic from earlier part of the conversation. This typically happens when advisor recapitulates the advisory session, returns to particular object or identifies appropriate solutions to address the issue discussed at the object. This practice occurs only in IT condition; in 18 out of 20 cases.
Practice 10 – adding free text and notes: The advisor adds additional notes or chooses from predefined template notes to denote the problem or the solution related to a particular object. This practice occurs in the IT condition, but can be compared to *Practice 14* from the non-IT case. Nevertheless, *Practice 14* occurs in the late phase of the advisory session, during recapitulation of particular problems and solution. Thanks to the IT, *Practice 10* can occur throughout the service provision – it occurs in 13 out of 20 cases.
Practice 11 – presenting a video: The advisor presents a video illustrating working methods of burglars and how they deal with doors and windows. Advisors introduce the video shortly and then add further explanations or clarifications to the presented material. This practice occurs in 14 out of 20 cases in IT condition.
Practice 12 – presenting a schema: The advisor presents a schema of a technical detail to the persuadee on the IT tool. There are numerous schemas provided in there and they reflect material presented in brochures and other printouts. This practice is the IT-based counterpart of *Practice 13*. It occurs in all 20 IT cases.
Practice 13 – presenting a brochure: The advisor presents a schema of a proposed solution to the persuadee in the brochures and print outs he carries with him. The material includes mostly a technical drawing of the proposed solution. This practice is the paper-based counterpart of *Practice 12*. It occurs in all 20 IT cases.
Practice 14 – annotating a brochure: The advisor adds additional notes and sketches to brochures and print outs. The information he adds to the brochures includes, e.g., information on which window or door it belongs to or what kind of materials can be used in the given context. This practice is the paper-based counterpart of *Practice 11*. It occurs in 10 out of 20 cases – four less than in the IT condition.
Practice 15 – presenting an exhibit: The advisor uses a mechanical example to illustrate how a specific locking mechanism works. In most cases, advisors present difference between mushroom and roller cam in the window fitting while presenting a piece of window hardware. Practice 15 occurs as follows: *(a)   IT   2   times (out of 20)   (b)   non-IT   14   times (out of 20)*

effort (e.g., assembly to be done). If the persuadee is clear about all those points, it becomes a *trigger* [6] to tackle the HS issues. The advisors apply particular practices and employ specific materials to support the triggering effect of the advisory encounter.

The identified practices occur across the whole data set and do not show coincidence with the particular advisors or do not result from order effects. However, they are interrelated. Collaboratively visualizing things (like in *Practice 19* and *Practice 4*) imply more extensive discussions (*Practice 17* and *Practice 2*). Some practices are related to the material used and address the visualization of content (*Practices 3, 4, 7–15, 18, 19*), others are conversational practices (*Practices 1, 2, 5, 6, 16, 17*). It is, thou, obvious that this division is not binary – especially the collaborative practices, rely on visualization as a common artifact as a basis for conversation (e.g., *Practice 4, 5, 7, 8, 9, 19*).

Table 3. Persuasive practices related to informing about the next necessary steps

Practice and its description
Practice 16 – mentioning the priorities: In general, the advisors suggest upgrading the mechanical security features (windows and doors) before going for electronics (e.g., alarm system). They provide a list of local crafts-people who are certified to make specific improvements. After making a short utterance about the necessity to contact a respective craftsman, they go over to the next topic. Practice 16 occurs as follows: (a) IT   20 *times (out of 20)*   (b)   *non-IT*   17 *times (out of 20)*
Practice 17 – discussing the priorities: After mentioning the general priorities, the advisor discusses them with the homeowner to make sure that they fit her expectations. As opposite to *Practice 16*, here additional questions are asked and the advisor makes sure that the homeowner understood the general tendency in this regard. Practice 17 occurs with the following frequency: (a) IT   17 *times (out of 20)*   (b)   *non-IT*   3 *times (out of 20)*
Practice 18 – listing things to be done: The advisor writes down and provides a list of things and issues to be addressed. The list does not give any priority to one or the other problem or solution, but summarizes all topics addressed throughout the provision of the service in a predefined order (door, windows, cellar, etc.). Alternative-ly, the respective information is written on the brochures or print outs. Practice 18 is characteristic for the non-IT condition and is applied there in 12 cases. In two cases (out of those 12), the advisor places the list between him and the persuadee, such that the notes were made collaboratively.
Practice 19 – prioritizing things to be done: The advisor lists all issues to be addressed and orders them accord-ing to the priorities and his personal assessment. This practice is supported by the provided IT and occurs only in the IT condition: the advisor can sort all issues he addressed according to the dimensions of priority and time. In most cases, he encourages the involvement of the persuadee such that the prioritizing has a collaborative charac-ter. Practice 19 occurs with the following frequency: (a)   *alone + IT*   6 *times (out of 20)*   (b)   *together + IT*   13 *times (out of 20)*

4.2   Relating Persuasive Practices to the Perceptions of the Persuadee

The above analysis shows that supporting visualization of specific content enables for occurrence of particular conversational and interactional practices. Nevertheless, the effectiveness of the practices cannot be solely related to their occurrence in the advisory encounter. In the following, we discuss the relation between PERS and DESA, as well as the relation between the occurrence of particular practices and those two measures.

Relation DESA – PERS: DESA and PERS stand in relation to each other and both define important aspects of persuadee experience in persuasion regarding health behavior as measured by a general, online survey [15]. Our analysis confirms this for the situation of HS advisory service, by using an onsite survey right after the these sessions. There is a significant and moderate-to-strong correlation between DESA and PERS across all our cases (two-tiled bivariate correlation: Pearson's Coefficient $corr = 0.5, p \leq 0.001$) and, especially, in the non-IT cases ($corr = 0.6, p \leq 0.005$). The coefficient we measure is higher than reported in earlier research (0.43 [15]). Further-more, we show that DESA is significantly higher in the IT condition than in the non-IT with a large effect size (IT: $\bar{x} = 4.72$; non-IT: $\bar{x} = 3.95$; $t(19) = 3.29, p \leq 0.005$), and, as consequence, PERS is higher in the IT than in the non-IT with a very small effect size (IT: $\bar{x} = 4.71$; non-IT $\bar{x} = 4.58$; $t(19) = 1.05, p \leq 0.1$). We do not observe significant results for other constructs from the model of Lehto et al. [15].

Influence of Practices on PERS and DESA: When asked about the most positive episode across both conditions or about the what increased their understanding, many persuadees point to the visualization potential of the IT – for video: *"I valued the fact, that one could directly show me how a potential burglary can look like"* [H13] and for pictures: *"Schemata made it easy to understand the technical solution – they were*

good in traditional advisory as well as in the modern one – just with the tablet you could directly see it at the object" [H16]. The visualization potential of modern technologies was emphasized in each interview. In particular, persuadees point to videos and schemata as elements that leverage understanding (*"It was a lot easier to understand the one [advisory session] where I could see the video and pictures"* [H8]), and the practice of recording needs as a way to personalize and individualize the advisory service (*"It was a personalized experience – he addressed my personal situation. One feels respected if their personal situation gets considered. One feels proud"* [H2]).

Asked about their motivation and ability to take next steps on HS, persuadees point to the prioritization practices: *"This was clearer in the IT, because one could see what to do next and what can wait"* [H16]. Some other account for the role of individualized pictures: *"I found the one with tablet more pleasant cause there was a through and individualized discussion towards the end (...). I could take this PDF with the photos of my doors and windows, and go to the craftsman, show this to him and ask for his help"* [H15]. Other persuadees emphasize the role of discussion in general: *"The conversation at the closure, it encouraged me and acts as a reminder of most important things – independent of whether with IT or not"* [H8]. The collaborative character of activities seems to be very central issue for many test participants: *"It helped to understand when we took the picture together. Clack... 'Look, there is your door'."* [H9] and *"So, my advisor, she took the pictures, added markings, made notes with me. And I think, those photos help to remind oneself of what needs to be done"* [H18].

On the one hand, the persuadees refer to particular materials used throughout the advisory sessions: schemata, videos, pictures, etc. On the other hand, they stress the interactional and conversational character of advisory sessions. We explore this issue while providing results of statistical dependence analysis of the PERS and DESA measures and the observed practices. We did not identify any (nearly) significant relation between practices and PERS or DESA for the non-IT condition. All the indications presented below describe solely the IT condition in a between subject mode.

The results of the Kruskal-Wallis test suggest a positive relation between *Practice 2 (discussion of homeowner needs)* and DESA ($H(1) = 2.53, p \leq 0.1$), as well as between *Practice 19-b (prioritizing things to be done – together with IT)* and DESA ($H(1) = 4.24, p \leq 0.05$). We also observe negative relation between *Practice 7-a (taking picture – alone with IT)* and DESA ($H(1) = -3.33, p \leq 0.1$) and between *Practice 7-a* and PERS ($H(1) = -2.46, p \leq 0.1$). Regression analysis, even if it does not produce a general regression equation for DESA or PERS, it still provides indications that confirm two dependencies: the positive relation between *Practice 19-b* and DESA ($B = 1.56, t = 2.91, p = 0.04$), as well as the negative one between *Practice 7-a* and PERS ($B = -0.8, t = -1.8, p \leq 0.1$). Finally, the set of two-independent-sample t-tests suggests the following positive relationships: (1) between presenting the video to the persuadee *(Practice 11)* and PERS ($t(17) = 1.66, p \leq 0.1$), (2) between collaborative annotation of the picture *(Practice 8-b)* and PERS ($t(18) = 1.64, p \leq 0.1$), and (3) between *Practice 19-b* and DESA ($t(17) = 1.66, p \leq 0.1$). In summary, only the relation between *Practice 19-b* and DESA was yielded in all tests, which seems an intuitive and still valuable – collaborative work practices with a shared visualization

improve the perceived design aesthetics of the HS session. The other tendencies we observe confirm that practices which have a collaborative character (*discussion, working together with the tool*) may tend to improve perceptions on PERS and DESA, while avoiding engagement in collaborative practices may lead to negative effects in this regard.

5   Discussion and Conclusion

Our analysis shows that advisors employ a whole range of persuasive practices. They differ with regard to use of artifacts (IT, brochures, etc.) and with regard to their collaborative character. Also, some practices address the homeowner's HS needs and the next steps, however the largest variety of practices is employed for addressing the persuadee's *ability* by discussing missing security features. The advisors put by far most effort to support these activities by using brochures, exhibits, and referring to windows and doors. With introduction of IT, new relevant practices emerge, such as: collaborative picture taking or video watching. Practices that improve persuasive character of the encounter involve collaboration and discussion around a shared artifact – according to the interview data and the quantitative analysis of survey responses. Importantly, IT improves design aesthetics (DESA), but has negligible effect on persuasiveness (PERS) as shown by comparison between conditions. Consequently, it is not the technology itself that enhances persuasiveness in HS encounters, but the way it is used makes the difference. In our opinion this is the key for further research in the area of PT for interpersonal interaction where successful persuasion is essential.

Hitherto, the focus of research in PT was on the human-computer influence, as well as computer-mediated and computer-moderated interpersonal influence [26]. The results suggest, that technology designed along the same lines has potential to establish effective practices for face-to-face interpersonal influence – in particular it shows that specific practices can easily emerge and supplement existing practices if appropriate IT is provided. We show that PT can be well applied in situations where a human persuader is needed due to the high complexity of decisions to be taken, as opposite to more classical application scenarios with a clear target state or behavior [1, 23]. This opens a new, fascinating area for PT researchers and shows first directions of research: establishing persuasive practices as work practices between persuader and persuadee.

In the course of generalizing our observations, it is easy to imagine that systems like the one used in current study, can be effortlessly extended in accordance with other design principles borrowed from PT. In the case of HS, this includes information on the improvements done by other people in similar situation and their attitude. We argue that PT community needs to extend its research focus beyond this limit [23] – it is easy to speculate about possible direction of research, e.g., health support apps where computer-mediated or -moderated persuasive systems are linked with advisory services at doctor's office. Through the design and application of the tool presented above, we show that the guidance developed for the computer-human influence [6] is applicable for interpersonal encounters. Our research, also, contributes to the knowledge on IT support in advisory services. So far, research in this area addresses concepts as transparency [19] or education [9], thus addressing the objectivism of such encounters.

However, considering persuasion in this context stresses a different side of those encounters being a meeting of two socially and organizationally linked actors following their goals. The identification of relevant persuasive practices helps the designers to engineer systems inducing those practices and the researcher to identify design elements linked with persuasion and differentiate them from features for facilitation or moderation.

Finally, the set of collaborative practices identified via statistical tests as having potentially strong influence on persuasiveness confirms the importance of practice-based studies for the PT. While following the general description of practices from the consulting literature [2], we are able to identify particular practices specific in the given context and provide a zoom-in analysis [18]. Thereby we confirm the value of such perspective in the PT research and claim, that it is the appropriate way to study effects, especially in human-human influence scenarios. The results do not come without limitations: practices perspective focuses on local, internal validity over the external one. Nevertheless, we show its potential for research in PT to explore human-human influence in IT-supported encounters and claim that the results can be adopted in other scenarios, such as medical advice – doctor who fails to convince a patient via words, could, e.g., employ videos showing negative impact of particular factor on the patient's body. We call for intensification of research oriented at practices resulting from use of PT in real situations and for deepening the understanding of persuasive practices. Alike in general HCI, we call for practice-turn in PT research [13]: What other persuasive practices emerge? Which of them can be supported by PT? How to design appropriate PT?

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